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Paper Paperboard Wood Pulp Capacity

fiber consumption

1981-1984 *with* additional data for 1985

definitions & grade descriptions

Practical Maximum Capacity: Practical Maximum Capacity, as defined in this survey, is the tonnage of paper, paperboard or pulp of normal commercial quality that could be produced with full use of equipment and adequate supplies of raw materials and labor, and assuming full demand. No allowance is made for losses due to unscheduled shutdowns, strikes, temporary lack of power, etc., which cause decreases in actual production, but not in productive capacity. Capacity of paper machines which produce more than one grade is apportioned in accordance with actual production patterns or plans for future operation.

Capacity is reported in short tons of net finished paper and paperboard and air-dry (10% moisture content) pulp. Shrinkage of bleached or semibleached pulp is taken into account.

Annual practical maximum capacity—includes changes in capacity only for the portion of the year in which they are actually effective.

Year-end practical maximum capacity—assumes that all changes in capacity are in effect from the first day of the year in which they occur.

New Machines and Net Improvements: Capacity increases or decreases are shown in two main groups: New Machines and Net Improvements.

New Machines—are defined as machines purchased or to be purchased from equipment manufacturers. Consequently, capacity changes resulting from transfers of paper machines from one mill to another are shown under Net Improvements.

Net Improvements—are defined as net changes resulting from modernization of machines, dismantling old machines, shifts in grades, etc.

Capacity increases from new machines are shown under New Machines for the first two years of operation (including the year of installation). Any additional capacity realized in a third or subsequent year is shown under Net Improvements.

Market Pulp Capacity: Market pulp in this survey is defined as wood pulp produced in the U.S. for sale to pulp consumers. It excludes pulp for use or consumption by a producing mill or for shipment by a producing mill to other mills within its supply region which it owns, controls or with which it is affiliated. (Shipments to owned mills outside the U.S. are defined as market pulp.)

PAPER GRADES

Newsprint: Paper used chiefly in the printing of newspapers, made largely from mechanical pulp and weighing not less than 28½ pounds nor more than 35 pounds (24 × 36 – 500).

Uncoated Groundwood: Uncoated papers contining more than 10% groundwood or other mechanical pulps in their furnish, excluding newsprint.

Machine and Off Machine Coated: Bleached papers with a coating weight of at least 2½ pounds (25 × 38 – 500) on either side and at least 50% of the coating consisting of clay (Kaolin).

Coated Groundwood: Coated papers containing more than 10% mechanical pulp (mostly stone groundwood and/or refiner) in their furnish.

Coated Free Sheet: Coated papers containing 10% or less mechanical pulp (mostly stone groundwood and/or refiner in their furnish).

Uncoated Free Sheet: Bleached uncoated printing and writing papers containing not more than 10% groundwood or other mechanical pulps in their furnish; i.e., offset, tablet, envelope, business papers (bond, ledger, mimeo, duplicator) form bond, cover and text and related papers.

Bleached Bristols: Includes tabulating index, tag and file folder, coated cover bristols, and uncoated bristols (index, printing, and postcard).

Cotton Fiber: Papers containing 25% or more in their furnish of cotton, cotton rags, cotton waste, linters, linter pulp, flax, or similar fibers.

Thin Papers: Includes carbonizing, condenser, cigarette, bible, and similar papers.

Packaging and Industrial Converting: Wrapping paper, shipping sack, bag and sack other than shipping sack, and other converting papers—18 pounds and over.

Unbleached Kraft: Paper containing more than 80% unbleached sulphate wood pulp. Wrapping paper, shipping sack, grocers sack and other bag, and other converting papers—18 lbs. and over (24 × 36 – 500).

Bleached Packaging and Industrial Converting: Paper made for similar end uses as unbleached kraft, but made from bleached, and semibleached sulphate and unbleached sulphite pulps. Wrapping paper, shipping sack, grocers and other bag and sack, and other converting papers—18 lbs. and over (24 × 36 – 500).

Specialty Packaging: Paper and board of all weights and furnishes, usually used as protective packaging for food and other consumer products, such as bakery bags, fast food and frozen food wraps. Also includes glassine, greaseproof and vegetable parchment paper.

Special Industrial: Paper and board, of all weights, calipers and furnishes, designed for specialized end uses and manufactured to exact customer specifications; includes abrasive paper, electrical insulation, filter paper and similar grades. Does not include wet machine board.

Tissue: Includes sanitary grades: i.e., toilet, facial, napkin, toweling, sanitary napkin, wiper and special sanitary papers, and waxing, wrapping, wadding and miscellaneous grades.

PAPERBOARD GRADES

Unbleached Kraft Paperboard: Paperboard made from a furnish containing not less than 80% wood pulp produced by the kraft sulphate process.

Linerboard: Unbleached kraft paperboard manufactured for use as facing material when combining paperboard for conversion into corrugated or solid fiber boxes. Includes solid unbleached kraft linerboard, both Fourdrinier and Cylinder, mottled white linerboard and clay coated unbleached kraft linerboard.

Folding: Paperboard manufactured, such as clay coated unbleached kraft and bleached lined unbleached kraft backed, for conversion into folding cartons and beverage carriers.

Other: All unbleached kraft paperboard whose end use is not otherwise classified, such as board for a filler for solid fiber board to be fabricated into a shipping container, tube, can, drum, file folder, tag, automotive panel, etc.

Solid Bleached Packaging Paperboard: Paperboard made for use in packaging from a furnish containing not less than 80% virgin bleached wood pulp. Bleached bristols not manufactured for packaging are included in the proper bleached bristol classification under papers.

Linerboard: Solid bleached paperboard, either Fourdrinier or Cylinder, manufactured for use as facing material when combining paperboard for conversion into corrugated or solid fiber boxes.

Folding: Solid bleached paperboard for conversion into folding cartons, such as folding cartons for ice cream, butter, oleomargarine, frozen foods, bakery products, cosmetics, drugs, etc.

Milk Carton and Food Service: Solid bleached paperboard for conversion into milk carton, heavyweight cup, and round nested food container, plate, dish and tray, and for packaging for moist, liquid and oily foods.

Other: Solid bleached paperboard for conversion into packaging of blister pack, tubes and other products not classified above and for industrial products not classified under bleached bristols.

Semichemical Paperboard: Paperboard made from a furnish containing not less than 75% virgin wood pulp, the predominant portion of which is produced by a semichemical process.

contents

3-7 COMMENTARY

8-10 SUMMARY ANNUAL CAPACITIES
8 Paper, Paperboard
8 Construction Paper & Board
9 Capacity Reductions
10 Wood Pulp
10 Machine Dried Wood Pulp
10 Market Wood Pulp

12-17 CAPACITY BY GRADE ANNUAL & YEAR END
12-13 Paper
14-15 Paperboard
15 Construction Paper & Board
16-17 Wood Pulp

18-19 ANNUAL CAPACITY REGIONAL DISTRIBUTION

20-21 FIBER FOR PAPER & PAPERBOARD MANUFACTURE
Wood Pulp - Own Manufacture & Purchased
Recyclable Paper
Other Fibers

21 PULPWOOD FOR WOOD PULP MANUFACTURE
Roundwood
Manufacturing Residues
Forest Residues

22-23 RECYCLABLE PAPER CONSUMPTION—END USE

22-23 WORLD CAPACITIES
22 Wood Pulp
23 Paper & Paperboard

24 ANNOUNCED
CAPACITY EXPANSIONS

side front cover DEFINITIONS &
GRADE DESCRIPTIONS

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Growth

Capacity for the manufacture of paper and paperboard other than construction grades will average 70.2 million tons in 1982 according to this latest survey conducted by the American Paper Institute. This total is about 158,000 tons less than the estimate made last year, reflecting a decline of about 231,000 tons in paper capacity offset by an increase of 73,000 tons in paperboard capacity.

This trend to lower capacity estimates is also apparent in the revised 1983 and 1984 estimates. For example, paper capacity in 1984 is now estimated to be 371,000 tons lower than the figure reported last year while paperboard is down 138,000 tons. Almost all of the reduced estimates reflect the removal of capacity of permanently shut down paper machines.

Overall, paper capacity is expected to grow at a 2.1% a year rate in the 1983-1985 years, paperboard capacity at about a 1.3% a year pace and wood pulp* capacity at a 1.6% rate.

The combined capacity for paper and paperboard is estimated at 73.8 million tons in 1985 for an annual growth rate of 1.7% between 1982 and 1985. This increase compares with the 2.4% a year gain experienced during the preceding fifteen year span. Almost all grades show a slowdown in capacity growth in the three years ahead; a notable exception being printing and writing papers where capacity is expected to increase 3.3% a year in the 1983-1985 period compared with a 3.1% a year gain in the preceding fifteen years.

Shutdowns of capacity excluding construction grades will total 845,000 tons during this three year period offsetting some of the 4.5 million ton gain in capacity resulting from the addition of new machines and rebuilds of others.

Capacity additions for wood pulp in the 1983-1985 period are expected to total 2.7 million net tons. Capacity is expected to reach 58.8 million tons in 1985 and, at this level, will maintain its long standing relationship of about 80% of paper and paperboard capacity.

*Excludes pulp for construction paper and board.

TABLE 1:
GROWTH TRENDS IN CAPACITY

Thousands short tons

GRADES	ADDITIONS 1968-1982		ADDITIONS 1983-1985	
	15 YEAR INCREASE	AVERAGE ANNUAL GROWTH	3 YEAR INCREASE	AVERAGE ANNUAL GROWTH
TOTAL ALL GRADES PAPER & PAPERBOARD	**20,785**	**2.2%**	**3,473**	**1.6%**
TOTAL PAPER & PAPERBOARD	**21,347**	**2.4**	**3,609**	**1.7**
TOTAL PAPER	**11,528**	**2.7**	**2,248**	**2.1**
NEWSPRINT	2,697	4.4	339	2.0
PRINTING & WRITING	6,617	3.1	1,820	3.3
PACKAGING & IND. CONV.	529	0.6	(93)	(0.5)
TISSUE	1,685	2.7	182	1.2
TOTAL PAPERBOARD	**9,819**	**2.2**	**1,361**	**1.3**
UNBLEACHED KRAFT	6,905	3.4	620	1.2
SOLID BLEACHED	916	1.7	61	0.5
SEMICHEMICAL	1,765	2.8	262	1.6
RECYCLED	233	0.2	418	1.6
CONSTRUCTION GRADES	**(562)**	**(1.0)**	**(136)**	**(1.4)**
TOTAL ALL GRADES WOOD PULP	**17,241**	**2.4%**	**2,645**	**1.5%**
TOTAL WOOD PULP (exc. pulp for Construction Paper & Board)	**17,175**	**2.5**	**2,666**	**1.6**
DISSOLVING & SPECIAL ALPHA	(24)	(0.1)	(5)	(0.1)
SULPHITE	(895)	(2.7)	13	0.2
SULPHATE & SODA*	15,296	3.0	2,183	1.7
SEMICHEMICAL	1,041	1.7	136	0.9
MECHANICAL	1,757	2.4	339	1.9
WOOD PULP FOR CONSTRUCTION PAPER & BOARD	**66**	**0.3**	**(21)**	**(0.4)**

*includes screenings

Not adjusted for rounding differences

TABLE 2:
CAPACITY CHANGES 1983-1985

Thousands short tons

TYPE OF CHANGE	PAPER & PAPERBOARD
NEW MACHINES	2,142
REBUILDS & OTHER	2,312
GROSS CHANGES	4,454
FACILITIES SHUT DOWN	(845)
NET CHANGES	3,609

TABLE 3:
REGIONAL DISTRIBUTION – CAPACITY & CHANGES

GRADES	NORTHEAST SHARE OF TOTAL CAPACITY IN 1981	NORTHEAST SHARE OF TOTAL NET CHANGES 1982-1985*	CENTRAL SHARE OF TOTAL CAPACITY IN 1981	CENTRAL SHARE OF TOTAL NET CHANGES 1982-1985*	SOUTH SHARE OF TOTAL CAPACITY IN 1981	SOUTH SHARE OF TOTAL NET CHANGES 1982-1985*	WEST SHARE OF TOTAL CAPACITY IN 1981	WEST SHARE OF TOTAL NET CHANGES 1982-1985*
PAPER & PAPERBOARD								
TOTAL†	**16.6%**	**9.9%**	**17.7%**	**17.1%**	**51.1%**	**59.6%**	**14.6%**	**13.4%**
NEWSPRINT	9.4	4.1	2.6	—	58.9	44.1	29.1	51.8
PRINTING & WRITING	33.8	23.2	29.3	23.7	28.4	49.5	8.5	3.6
TISSUE	33.3	(25.4)	24.8	58.3	25.5	45.1	16.4	22.0
UNBL. KRAFT PAPERBCARD	—	—	—	—	83.4	94.6	16.6	5.4
SEMICHEMICAL PAPERBOARD	2.6	(5.5)	32.3	20.9	51.0	79.5	14.1	5.1
WOOD PULP								
TOTAL†	**8.2%**	**4.9%**	**6.9%**	**3.5%**	**67.3%**	**87.8%**	**17.6%**	**4.0%**
SULPHATE & SODA	5.7	3.0	3.2	1.2	75.8	92.2	15.3	3.6
SEMICHEMICAL	10.2	9.3	30.5	1.9	46.2	90.8	13.1	(2.0)
MECHANICAL	21.3	10.6	10.2	20.0	46.5	59.0	22.0	10.4

*Percent change in four year period

†Total of grades shown

Changes in Presentation

For the most part, the construction paper and board grades include products whose end use is in construction and building. In 1979, when it was clear that alternate statistics were available, API's survey excluded the capacities of hard pressed board mills and their related wood pulp facilities. Recent changes in technology have now significantly altered the manufacturing process for roofing materials and have resulted in the actual or imminent shutdown of thirty six mills. The capacities of these mills, a total of 878,000 tons, have been removed from our estimates for construction paper. By 1983, capacity for the production of construction paper and board grades will total only 3.2 million tons, compared with 4.1 million tons in 1981.

The changes in technology suggest that the presentation of our survey results would be more helpful if we included a subtotal for the paper and paperboard grades alone. Our commentary and tables will relate primarily to the non-construction grades of paper, paperboard and wood pulp.

Regional Capacity

Table 3 summarizes the regional distribution of capacity in 1981 and shows each region's share of growth for the major grades of paper, paperboard and wood pulp in the 1982-1985 years. The concentration of the industry in the southern states is highlighted by their dominant share of 51.1% of 1981 paper and paperboard capacity and 67.3% of capacity for the major paper grades of wood pulp. It is also clear that the South will increase its relative share in the coming three years, with estimated increases totalling 59.6% of the total expected

TABLE 4:
FIBER SOURCES FOR PAPER & PAPERBOARD MANUFACTURE

Thousands short tons

GRADES	1981 ANNUAL TONS	1981 PERCENT	1982 ANNUAL TONS	1983 ANNUAL TONS	1984 ANNUAL TONS	1985 ANNUAL TONS	1985 PERCENT
TOTAL CONSUMPTION	**66,981**	**100.0%**	**65,751**	**71,221**	**73,580**	**75,073**	**100.0%**
PRIMARY FIBERS	**29,935**	**44.7**	**29,478**	**31,244**	**32,295**	**32,876**	**43.8**
WOOD PULP	29,935	44.7	29,478	31,244	32,295	32,876	43.8
SECONDARY FIBERS	**37,046**	**55.3**	**36,273**	**39,977**	**41,285**	**42,197**	**56.2**
WOOD PULP	21,237	31.7	20,485	22,256	22,909	23,321	31.1
RECYCLABLE PAPER*	15,217	22.7	15,245	17,164	17,839	18,333	24.4
OTHER	592	0.9	543	557	537	543	0.7

Note: Consumption for 1983—1985 assumes capacity levels of production.

**Includes the following tonnage consumed in the manufacture of molded pulp products; 1981 & 1982, 180,000 tons; 1983-1985, 187,000 tons.*

TABLE 5:
ANNUAL CAPACITIES 1970-1985

Thousands short tons

YEAR	ANNUAL CAPACITY PAPER & PAPERBOARD	ANNUAL CAPACITY ALL GRADES	CAPACITY ADDITIONS DURING YEAR PAPER & PAPERBOARD	CAPACITY ADDITIONS DURING YEAR ALL GRADES	PERCENT INCREASE PAPER & PAPERBOARD	PERCENT INCREASE ALL GRADES
1970	53,260	57,195	1,140	1,221	2.2%	2.2%
1971	54,136	58,141	876	946	1.6	1.7
1972	55,873	59,965	1,671	1,824	3.1	3.1
1973	58,164	62,284	2,291	2,319	4.1	3.9
1974	59,527	63,779	1,363	1,495	2.3	2.4
1975	60,140	64,369	613	590	1.0	0.9
1976	61,307	65,673	1,167	1,304	1.9	2.0
1977	62,004	66,459	697	786	1.1	1.2
1978	63,091	67,419	1,087	960	1.8	1.4
1979	64,615	69,033	1,524	1,614	2.4	2.4
1980	66,368	70,716	1,753	1,683	2.7	2.4
1981	68,172	72,255	1,804	1,539	2.7	2.2
1982F	70,197	73,502	2,025	1,247	3.0	1.7
1983F	71,155	74,338	958	836	1.4	1.1
1984F	72,455	75,622	1,300	1,284	1.8	1.7
1985F	73,806	76,975	1,351	1,353	1.9	1.8

F—Forecast

growth in paper and paperboard capacity and 87.6% of new wood pulp capacity growth. Each of the other regions will lose share of capacity relative to its position in 1981. However, there are some variations in this pattern in individual grades as, for example, tissue grades.

Raw Materials

Of the almost 67 million tons of fibers used as furnish in papermaking in 1981, 37 million tons, or 55.3%, were derived from secondary materials. This proportion is expected to increase to 56.2% in 1985, principally with expanded use of recyclable paper.

Recyclable paper consumption totalled 15.2 million tons in 1981 and comprised 22.7% of total consumption while wood pulp produced from secondary fibers such as residues from manufacturing and logging operations totalled 21.2 million tons or 31.7% of the fibers total. An additional 592,000 tons of fiber including bagasse, cotton linters, textile and other miscellaneous wastes comprised about 1.0% of the industry's total furnish.

Paper and Paperboard

Newsprint

With only one new machine now under construction, newsprint capacity is expected to grow by a comparatively modest 6.0% during the next three years. This increase contrasts sharply with the preceding three year period when four new machines came on stream and these, together with improvements on other machines, boosted U.S. newsprint capacity by an unprecedented 35%, or 1.5 million tons.

commentary

Printing and Writing

At an average annual growth rate of 3.3% during the 1983-1985 period, capacity for printing and writing papers will be the fastest growing segment of the paper industry. The net increase in capacity, planned at 1.8 million tons, will bring the productive potential for these papers to 19.6 million annual tons during 1985. Capacity for coated groundwood and coated free sheet papers will increase by 429,000 tons and 288,000 tons, respectively, by 1985 and will share a very strong growth rate averaging 4.1% annually. Uncoated free sheet capacity, the largest category of the printing and writing papers, is expected to increase from 8.9 million tons in 1982 to 9.9 million tons in 1985. This level includes 114,000 tons of capacity which has been idle for several months and in line with our procedures will be removed from next year's estimates if it is still inactive at that time.

Kraft Packaging Papers

Changing market conditions for unbleached kraft packaging papers are reflected in a reduced level of capacity which is now expected to decline 107,000 tons by 1985 from the 1982 total of 3,987,000 tons. Most of this reduction results from the anticipated swings of machine time to kraft paperboard production and from the planned shutdown of a small machine. These reductions continue the experience of the previous five years when several machines were shut down and overall capacity showed a net decline of 330,000 tons.

Tissue

Expansions in capacity for tissue grades will average 1.2% annually in the 1983-1985 period, to reach 5.4 million tons in 1985.

Unbleached Kraft Paperboard

Net additions to capacity for unbleached kraft paperboard through 1985 will total only 620,000 tons, the lowest increase in any three year period during the past decade. This low growth rate reflects the effects of the present recession on capital spending—several companies have delayed major expansion projects —and the shutdown of machines in two southern mills.

Semichemical Paperboard

After a strong 5.7% or 285,000 ton capacity increase in 1982, increases in semichemical paperboard capacity during the next three years are expected to average only 1.6% annually for a total gain of 262,000 tons. As with unbleached kraft paperboard its companion grade in the manufacture of corrugated shipping containers, the curtailed capacity increase for semichemical paperboard reflects the removal of capacity representing permanent closures of existing facilities totalling 286,000 tons.

Solid Bleached Paperboard

No new machines or major capacity expansions are reported for bleached paperboard during the survey period. Total capacity, at 4,184,000 tons in 1982, will increase by only 61,000 tons to reach 4,245,000 tons in 1985. The predominant end use of the bleached paperboard grades is in food packaging, which places them in competition with plastic packaging materials.

Recycled Paperboard

Expansions totalling 418,000 tons, and representing a rate of increase averaging 1.6% annually, will raise total capacity for the recycled grades of paperboard from 8.7 million tons in 1982 to 9.1 million tons in 1985. These gains equal the rate of increase in capacity for the paper industry as a whole and show a marked improvement over the previous twelve years when more than 2.5 million tons of permanently shut down capacity offset all gains from new capacity additions.

Wood Pulp

Sulphate and Soda Paper Grade Pulps

Capacity increases for sulphate and soda pulps, totalling 2.2 million tons during the next three years, will account for more than 80% of all new wood pulp expansion. The annual rate of capacity growth will average 1.7% compared to the 3% historical annual average during the preceding fifteen years.

Over time, these high grade kraft pulps have become increasingly dominant as furnish in papermaking and have raised their share of all grades of wood pulp capacity from 61.5% in 1965 to 73.1% in 1982. Growth rates reported in this survey show that this share is expected to increase in future years.

Sulphite Paper Grade Pulps

Two sulphite pulp mills were shut down in 1981 and 1982 and their capacities totalling 142,000 tons have been removed from the estimates in this report. While several improvements in other mills have partially offset this loss, sulphite pulp capacity continues to decline and its share of total chemical paper grade pulps will shrink from 4.3% in 1981 to 3.9% in 1985.

Mechanical Pulps

Table 6 shows both the rapid growth in capacity for thermomechanical pulp and a corresponding reduction in capacity for stone groundwood pulp, for which it has proved to be an attractive substitute. A negligible growth of only 17,000 tons is projected for thermomechanical pulp in 1985 which is related to a similar slowdown in the growth of newsprint capacity, where it is largely utilized.

TABLE 6:
ANNUAL CAPACITIES

Thousands short tons

YEAR	THERMO-MECHANICAL	REFINER	STONE GROUND-WOOD
1975	131	500	3,615
1977	567	538	3,397
1979	811	507	3,255
1981	1,766	489	3,239
1983F	2,115	535	3,254
1985F	2,319	553	3,248

F—Forecast

Dissolving Pulps

After a decline of 51,000 tons in 1982 resulting from the allocation of capacity to the production of paper grade pulps, capacity for dissolving pulps will remain flat at 1.5 million tons through 1985. Capacity for these pulps, where end use is concentrated in textiles and many other products, has remained virtually unchanged for more than twenty years.

Market Wood Pulp

Over the next three years, capacity for bleached sulphate market paper grade pulp is now expected to grow at a 4.5% average annual rate. If these increases are achieved, capacity for these pulps will grow at three times the 1.5% annual rate projected for all grades of wood pulp and will reach 5.7 million tons in 1985. At least 175,000 annual tons of the 706,000 ton total increase have been announced as export tonnage according to a member report.

Norma Pace

Norma Pace
Senior Vice President
December, 1982

paper & paperboard

capacity summary 1981-1985 annual

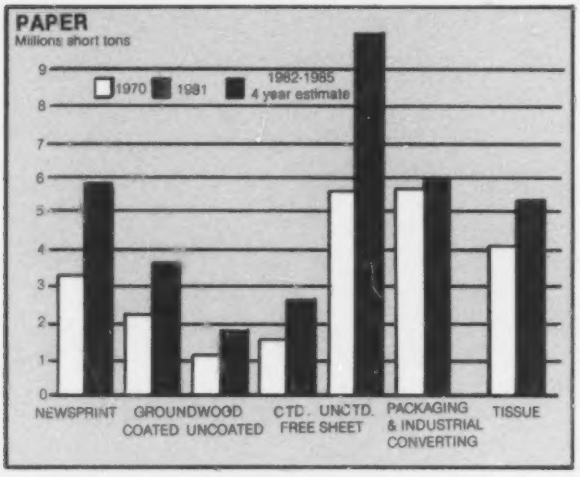
Practical Maximum Basis
Thousands short tons

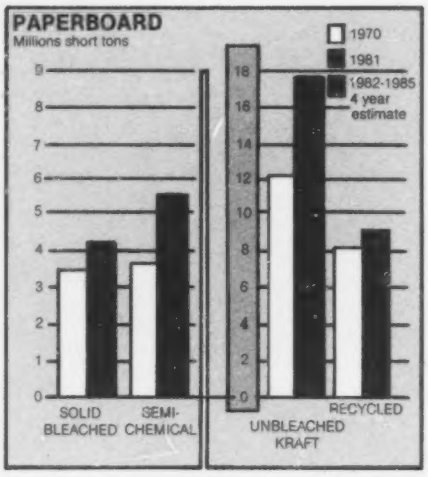
GRADES	1981	1982	1983	1984	1985*
TOTAL ALL GRADES	**72,255**	**73,502**	**74,338**	**75,622**	**76,975**
Total Paper & Paperboard	**68,172**	**70,197**	**71,155**	**72,455**	**73,806**
Total Paper	**33,706**	**34,696**	**35,427**	**36,280**	**36,944**
NEWSPRINT	5,457	5,654	5,752	5,955	5,994
PRINTING WRITING & RELATED	17,302	17,827	18,468	19,062	19,647
Uncoated Groundwood	1,625	1,742	1,747	1,749	1,749
Coated Groundwood	3,047	3,312	3,625	3,686	3,741
Coated Free Sheet	2,245	2,271	2,412	2,501	2,559
Uncoated Free Sheet	8,828	8,937	9,049	9,439	9,900
Cotton Fiber	147	152	158	159	160
Thin Papers	374	373	374	374	374
Solid Bleached Bristols	1,035	1,039	1,103	1,154	1,163
PACKAGING & IND. CONV.	5,913	6,042	5,997	6,014	5,949
Unbleached Kraft	3,961	3,987	3,932	3,928	3,880
Bleached Packaging & Ind. Conv.	554	608	612	612	600
Specialty Packaging	529	531	529	532	524
Special Industrial	870	916	924	941	945
TISSUE	5,035	5,172	5,210	5,249	5,354
Total Paperboard	**34,466**	**35,501**	**35,728**	**36,175**	**36,862**
UNBLEACHED KRAFT	16,738	17,313	17,361	17,446	17,933
of which Kraft Linerboard	15,372	15,928	16,063	16,157	16,642
SOLID BLEACHED	4,141	4,184	4,198	4,239	4,245
SEMICHEMICAL	4,988	5,273	5,249	5,479	5,535
RECYCLED	8,599	8,731	8,920	9,011	9,149
Total Construction Paper & Board and Other	**4,082**	**3,305**	**3,183**	**3,167**	**3,169**

**Capacity additions presented here for 1985 include only presently known commitments and do not necessarily represent final expansion plans of the industry for that year.*

Totals not adjusted for rounding differences.

capacity/annual growth comparison





capacity reductions

PAPER AND PAPERBOARD MILLS AND MACHINES SHUT DOWN

Thousands short tons

GRADES	1970-1975 NUMBER OF MACHINES	1970-1975 NUMBER OF COMPLETE MILLS	1970-1975 ANNUAL CAPACITY	1980-1982 NUMBER OF MACHINES	1980-1982 NUMBER OF COMPLETE MILLS	1980-1982 ANNUAL CAPACITY REMOVED FROM SURVEY TOTALS	1980-1982 ANNUAL CAPACITY NOT REMOVED FROM SURVEY TOTALS
TOTAL	**183**	**56**	**3,514**	**167**	**77**	**3,769**	**633**
Paper							
Newsprint	—	—	—	—	—	—	—
Printing-Writing	68	13	1,062	24	4	375	114
Pkg. & Ind. Conv.	24	6	222	18	6	283	—
Tissue	24	8	250	28	11	274	41
Paperboard							
Unbl. Kraft	2	—	128	5		512	—
Bl. Kraft	2	—	61	—	—	—	—
Semichemical	6	2	248	6	2	458	—
Recycled	49	23	1,362	19	9	519	250
Construction Paper & Board	8	4	181	67	45	1,348	228
	1976-1979			**1983-1985**			
TOTAL	**107**	**28**	**2,629**	**6**	**2**	**387**	**–**
Paper							
Newsprint	3	1	231	—	—	—	—
Printing-Writing	28	3	476	1	—	39	—
Pkg. & Ind. Conv.	24	4	357	1	—	34	—
Tissue	16	5	154	—	—	—	—
Paperboard							
Unbl. Kraft	1	1	240	2	—	280	—
Bl. Kraft	2	1	162	—	—	—	—
Semichemical	2	—	145	—	—	—	—
Recycled	20	6	645	—	—	—	—
Construction Paper & Board	11	7	219	2	2	34	—

Shutdowns represent machines and mills reported to the API as permanent or indefinite closures and have been removed from capacity totals. Not all of the facilities have been dismantled and some portion of their productive capacity could be restored.

capacity summary 1981-1985 annual

Practical Maximum Basis
Thousands short tons

GRADES	1981	1982	1983	1984	1985*
TOTAL ALL GRADES WOOD PULP	**56,831**	**57,803**	**58,064**	**59,208**	**60,448**
Total Wood Pulp (exc. pulp for Construction Paper & Board)	**54,891**	**56,180**	**56,462**	**57,606**	**58,846**
DISSOLVING	1,598	1,547	1,542	1,542	1,542
CHEMICAL PAPER GRADES	43,143	44,030	44,321	45,039	46,226
SULPHITE PAPER GRADES	1,855	1,797	1,765	1,804	1,810
SULPHATE & SODA PAPER GRADES	41,288	42,233	42,556	43,235	44,416
Bleached & Semibleached Softwood	11,757	12,023	12,258	12,739	13,137
Bleached & Semibleached Hardwood	8,559	8,688	8,861	9,090	9,533
Unbleached	20,972	21,523	21,437	21,406	21,746
SEMICHEMICAL	4,597	4,768	4,641	4,866	4,904
MECHANICAL	5,495	5,780	5,904	6,105	6,120
SCREENINGS	58	54	54	54	54
Total Wood Pulp for Contruction Paper & Board†	**1,940**	**1,623**	**1,602**	**1,602**	**1,602**
TOTAL MACHINE DRIED WOOD PULP	**9,328**	**9,416**	**9,617**	**9,844**	**10,296**
DISSOLVING	1,598	1,547	1,542	1,542	1,542
CHEMICAL PAPER GRADES	7,621	7,767	7,974	8,200	8,652
SULPHITE	496	467	432	432	432
BLEACHED SULPHATE	6,935	7,123	7,357	7,583	8,035
UNBLEACHED SULPHATE	190	177	185	185	185
ALL OTHER	108	102	102	102	102
TOTAL MARKET WOOD PULP	**6,972**	**6,951**	**7,014**	**7,208**	**7,648**
DISSOLVING	1,579	1,540	1,534	1,534	1,534
CHEMICAL PAPER GRADES	5,375	5,401	5,469	5,663	6,103
SULPHITE	341	263	257	257	257
SULPHATE	5,034	5,138	5,212	5,406	5,846
Bleached & Semibleached	4,867	4,989	5,062	5,254	5,695
Unbleached	167	150	151	152	152
ALL OTHER	17	10	10	10	10

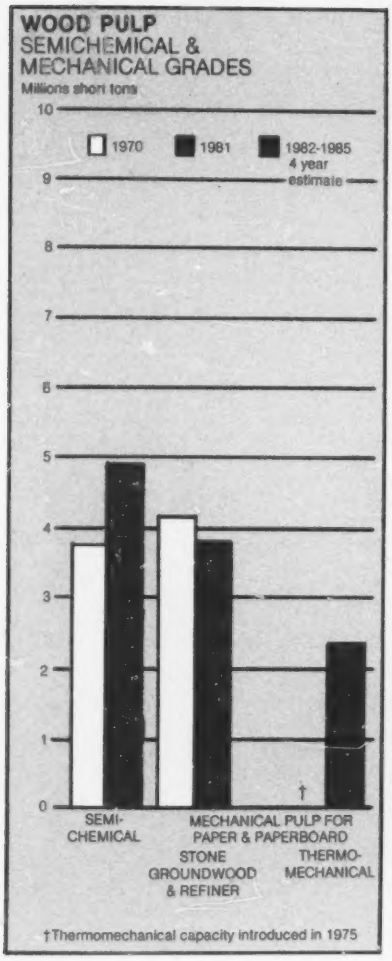
Based on information provided by producers. Reflects diversion of drying capacity to and from own use, installation of new equipment and retirement of existing equipment.

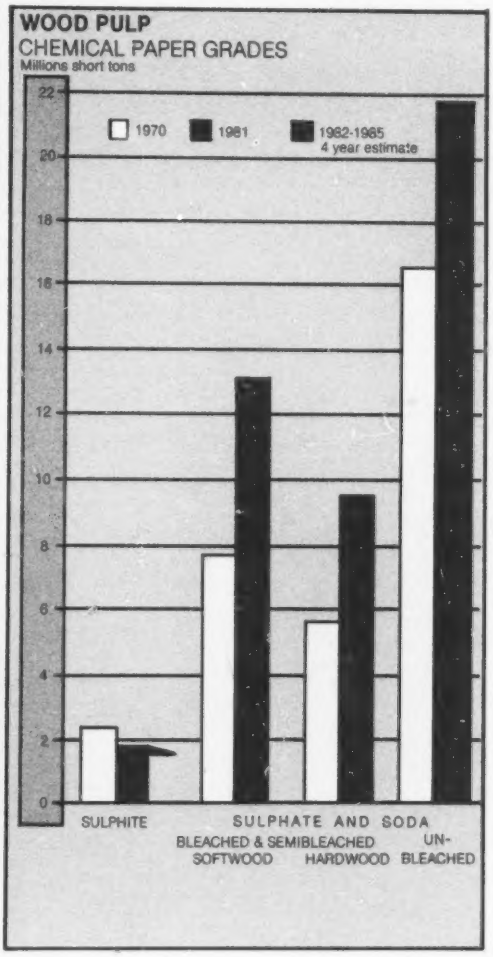
**Capacity additions presented here for 1985 include only presently known commitments and do not necessarily represent final expansion plans of the industry for that year.*

†Excludes the defibrated/exploded pulp capacity of mills that produce hard pressed board.

Totals not adjusted for rounding differences.

capacity/annual growth comparison





paper by grade

capacity/annual • year end • daily

	TOTAL ALL GRADES PAPER & PAPER-BOARD	TOTAL PAPER & PAPER-BOARD		*Practical Maximum Basis* *Thousands short tons*	TOTAL PAPER	NEWS-PRINT Total	Total	Uncoated Ground-wood	C G
ANNUAL CAPACITY 1981-1985	**72,255**	**68,172**	**1981**	**Annual Capacity**	**33,706**	**5,457**	**17,302**	**1,625**	
Annual Capacity includes changes in capacity only for the portion of the year in which they are actually effective	1,804	1,800		New Machines	968	139	481	147	
	(556)	225		Net Improvements	22	58	45	(31)	
	73,502	**70,197**	**1982**	**Annual Capacity**	**34,696**	**5,654**	**17,827**	**1,742**	
	839	837		New Machines	550	10	448	—	
	(2)	121		Net Improvements	181	88	193	5	
	74,338	**71,155**	**1983**	**Annual Capacity**	**35,427**	**5,752**	**18,468**	**1,747**	
	498	498		New Machines	449	171	270	—	
	786	802		Net Improvements	405	31	325	2	
	75,622	**72,455**	**1984**	**Annual Capacity**	**36,280**	**5,955**	**19,062**	**1,749**	
	807	807		New Machines	481	—	410	—	
	546	545		Net Improvements	182	39	175	—	
	76,975	**73,806**	**1985***	**Annual Capacity**	**36,944**	**5,994**	**19,647**	**1,749**	
YEAR END CAPACITY 1981-1985	**73,747**	**69,957**	**1981**	**Year End Capacity**	**34,444**	**5,633**	**17,593**	**1,741**	
Year End Capacity is calculated by multiplying Daily Rate by number of Available Days	726	720		New Machines	594	—	476	—	
	(658)	(62)		Net Improvements	31	97	26	2	
	73,813	**70,613**	**1982**	**Year End Capacity**	**35,068**	**5,731**	**18,093**	**1,743**	
	683	683		New Machines	465	181	268	—	
	274	307		Net Improvements	323	23	319	6	
	74,770	**71,603**	**1983**	**Year End Capacity**	**35,856**	**5,935**	**18,679**	**1,749**	
	757	757		New Machines	529	—	475	—	
	933	937		Net Improvements	322	22	276	—	
	76,465	**73,297**	**1984**	**Year End Capacity**	**36,708**	**5,956**	**19,430**	**1,749**	
	606	606		New Machines	342	—	315	—	
	375	373		Net Improvements	171	49	164	—	
	77,446	**74,276**	**1985***	**Year End Capacity**	**37,221**	**6,005**	**19,909**	**1,749**	
DAILY RATE 1981-1985	349	351	**1981**	Available Days	353	358	352	357	
	211.18	**199.49**		**Daily Rate**	**97.66**	**15.74**	**49.91**	**4.88**	
	350	351	**1982**	Available Days	353	357	353	358	
	210.99	**201.28**		**Daily Rate**	**99.43**	**16.04**	**51.29**	**4.88**	
	350	351	**1983**	Available Days	353	357	353	358	
	213.71	**204.12**		**Daily Rate**	**101.67**	**16.63**	**52.94**	**4.89**	
	350	351	**1984**	Available Days	353	357	353	358	
	218.50	**208.91**		**Daily Rate**	**104.07**	**16.69**	**55.06**	**4.89**	
	350	351	**1985***	Available Days	353	357	353	358	
	221.28	**211.69**		**Daily Rate**	**105.52**	**16.83**	**56.41**	**4.89**	

**Capacity additions presented here for 1985 include only presently known commitments and do not necessarily represent final expansion plans of the industry for that year.*

PRINTING, WRITING & RELATED						PACKAGING & INDUSTRIAL CONVERTING					TISSUE
ted und- od	Coated Free Sheet	Uncoated Free Sheet	Cotton Fiber	Thin Papers	Solid Bleached Bristols	Total	Un- bleached Kraft	Bleached Packaging & Industrial Converting	Specialty Packaging	Special Industrial	Total
947	2,245	8,828	147	374	1,035	5,913	3,961	554	529	870	5,035
229	—	105	—	—	—	189	189	—	—	—	158
37	27	4	4	—	5	(60)	(162)	54	3	46	(21)
312	2,271	8,937	152	373	1,039	6,042	3,987	608	531	916	5,172
110	93	45	—	—	—	18	18	—	—	—	74
3	47	68	6	—	63	(64)	(74)	5	(2)	7	(36)
525	2,412	9,049	158	374	1,103	5,997	3,932	612	529	924	5,210
46	46	177	—	—	—	4	4	—	—	—	4
14	43	212	1	—	52	(13)	(8)	—	3	17	36
586	2,501	9,439	159	374	1,154	6,014	3,928	612	532	941	5,249
—	24	387	—	—	—	—	—	—	—	—	71
56	35	75	1	—	9	(65)	(48)	(13)	(8)	4	33
741	2,559	9,900	160	374	1,163	5,949	3,880	600	524	945	5,354
125	2,251	8,905	150	374	1,047	6,026	4,020	553	538	915	5,192
992	—	85	—	—	—	25	25	—	—	—	93
9	43	(40)	8	—	4	(1)	(51)	60	(10)	1	(91)
525	2,294	8,949	158	374	1,049	6,050	3,993	612	527	917	5,195
141	127	—	—	—	—	16	16	—	—	—	—
12	48	193	1	—	58	(55)	(68)	—	3	9	37
377	2,470	9,143	159	374	1,107	6,011	3,942	612	530	926	5,232
—	36	439	—	—	—	—	—	—	—	—	54
30	33	160	1	—	52	(6)	(15)	—	4	18	18
707	2,538	9,742	160	374	1,160	6,017	3,927	612	534	944	5,305
—	—	315	—	—	—	—	—	—	—	—	27
56	43	61	—	—	4	(76)	(52)	(15)	(12)	3	34
763	2,582	10,118	160	374	1,163	5,941	3,875	597	522	947	5,366
354	355	351	314	342	357	349	354	351	350	324	353
8.84	6.35	25.34	.48	1.09	2.94	17.29	11.36	1.58	1.54	2.82	14.72
355	355	351	314	341	354	348	353	353	350	325	353
9.92	6.47	25.46	.50	1.10	2.96	17.38	11.32	1.73	1.51	2.82	14.72
355	355	352	315	341	354	348	353	353	350	325	353
0.35	6.96	26.01	.51	1.10	3.13	17.27	11.17	1.73	1.52	2.85	14.83
356	355	352	315	341	354	348	353	353	350	326	353
0.43	7.16	27.70	.51	1.10	3.27	17.29	11.13	1.73	1.52	2.90	15.04
356	355	352	315	341	354	348	353	353	350	326	353
0.58	7.28	28.77	.51	1.10	3.28	17.07	10.98	1.69	1.49	2.91	15.21

Totals not adjusted for rounding differences.

paperboard by grade

capacity/annual • year end • daily

			Practical Maximum Basis Thousands short tons	TOTAL PAPER BOARD	UNBLEACHED KRAFT PAPERBOARD			SOLID BLEACHED PACKAGING PAPERBOARD				
					Total	Liner-board	Folding	Other	Total	Liner-board	Folding	Milk Carton & Food Service	Other
ANNUAL CAPACITY 1981-1985 *Annual Capacity includes changes in capacity only for the portion of the year in which they are actually effective*	1981	**Annual Capacity**	**34,466**	**16,738**	**15,372**	**799**	**567**	**4,141**	**106**	**1,966**	**1,839**	**230**
		New Machines	832	594	594	—	—	—	—	—	—	—
		Net Improvements	203	(19)	(39)	51	(30)	43	(3)	43	9	(6)
	1982	**Annual Capacity**	**35,501**	**17,313**	**15,928**	**850**	**535**	**4,184**	**103**	**2,009**	**1,849**	**223**
		New Machines	287	115	115	—	—	—	—	—	—	—
		Net Improvements	(60)	(67)	21	(69)	(19)	14	—	14	1	(1)
	1983	**Annual Capacity**	**35,728**	**17,361**	**16,063**	**781**	**516**	**4,198**	**103**	**2,023**	**1,850**	**223**
		New Machines	49	25	25	—	—	—	—	—	—	—
		Net Improvements	398	60	69	—	(9)	40	—	18	22	1
	1984	**Annual Capacity**	**36,175**	**17,446**	**16,157**	**781**	**508**	**4,239**	**103**	**2,041**	**1,872**	**223**
		New Machines	325	212	212	—	—	—	—	—	—	—
		Net Improvements	362	275	273	—	2	6	—	3	2	1
	1985*	**Annual Capacity**	**36,862**	**17,933**	**16,642**	**781**	**510**	**4,245**	**103**	**2,044**	**1,874**	**224**
YEAR END CAPACITY 1981-1985 *Year End Capacity is calculated by multiplying Daily Rate by number of Available Days*	1981	**Year End Capacity**	**35,513**	**17,461**	**16,010**	**885**	**566**	**4,172**	**104**	**1,988**	**1,852**	**227**
		New Machines	125	125	125	—	—	—	—	—	—	—
		Net Improvements	(93)	(298)	(162)	(104)	(31)	23	(1)	30	(1)	(5)
	1982	**Year End Capacity**	**35,545**	**17,288**	**15,973**	**781**	**534**	**4,195**	**103**	**2,017**	**1,852**	**223**
		New Machines	217	45	45	—	—	—	—	—	—	—
		Net Improvements	(16)	(14)	15	—	(29)	4	—	6	(2)	—
	1983	**Year End Capacity**	**35,746**	**17,319**	**16,033**	**781**	**505**	**4,199**	**103**	**2,024**	**1,850**	**223**
		New Machines	228	195	195	—	—	—	—	—	—	—
		Net Improvements	615	279	275	—	5	46	—	20	24	1
	1984	**Year End Capacity**	**36,589**	**17,794**	**16,503**	**781**	**510**	**4,245**	**103**	**2,044**	**1,874**	**224**
		New Machines	264	89	89	—	—	—	—	—	—	—
		Net Improvements	202	154	154	—	—	1	—	1	—	—
	1985*	**Year End Capacity**	**37,055**	**18,037**	**16,745**	**781**	**510**	**4,245**	**103**	**2,045**	**1,874**	**224**
DAILY RATE 1981-1985	1981	Available Days	349	353	353	350	357	356	341	357	357	354
		Daily Rate	**101.84**	**49.47**	**45.36**	**2.53**	**1.59**	**11.71**	**.31**	**5.56**	**5.20**	**.64**
	1982	Available Days	349	353	353	350	356	356	341	357	356	353
		Daily Rate	**101.85**	**48.93**	**45.20**	**2.23**	**1.50**	**11.79**	**.30**	**5.66**	**5.20**	**.63**
	1983	Available Days	349	353	353	350	357	356	341	357	356	353
		Daily Rate	**102.45**	**49.02**	**45.37**	**2.23**	**1.42**	**11.80**	**.30**	**5.67**	**5.20**	**.63**
	1984	Available Days	349	353	353	350	357	356	341	357	356	353
		Daily Rate	**104.84**	**50.37**	**46.71**	**2.23**	**1.43**	**11.93**	**.30**	**5.73**	**5.26**	**.63**
	1985*	Available Days	349	353	353	350	357	356	341	357	356	353
		Daily Rate	**106.17**	**51.06**	**47.40**	**2.23**	**1.43**	**11.93**	**.30**	**5.73**	**5.26**	**.63**

*Capacity additions presented here for 1985 include only presently known commitments and do not necessarily represent final expansion plans of the industry for that year.

construction paper & board by grade

capacity/annual year end • daily

SEMI-CHEMICAL PAPERBOARD	RECYCLED PAPERBOARD							
Total	Total	Linerboard	Corrugating Medium	Container Chip & Filler Board	Folding	Set-up	Gypsum Wall Board Facing	Other
4,988	8,599	463	1,349	309	2,633	335	1,251	2,260
238	—	—	—	—	—	—	—	—
47	133	(6)	74	25	17	(4)	9	17
5,273	**8,731**	**457**	**1,423**	**334**	**2,650**	**331**	**1,259**	**2,277**
172	—	—	—	—	—	—	—	—
(196)	188	130	46	(19)	1	—	16	14
5,249	**8,920**	**587**	**1,469**	**315**	**2,652**	**331**	**1,276**	**2,291**
24	—	—	—	—	—	—	—	—
206	91	27	23	2	10	1	16	12
5,479	**9,011**	**614**	**1,492**	**317**	**2,662**	**333**	**1,292**	**2,302**
9	105	105	—	—	—	—	—	—
48	33	1	4	—	10	1	10	8
5,535	**9,149**	**719**	**1,496**	**317**	**2,672**	**334**	**1,302**	**2,310**
5,222	**8,658**	**427**	**1,393**	**333**	**2,647**	**331**	**1,254**	**2,273**
—	—	—	—	—	—	—	—	—
23	159	110	59	(21)	—	—	9	2
5,245	**8,817**	**537**	**1,451**	**312**	**2,647**	**331**	**1,263**	**2,275**
173	—	—	—	—	—	—	—	—
(173)	167	67	36	4	9	1	25	23
5,244	**8,984**	**604**	**1,488**	**317**	**2,656**	**332**	**1,288**	**2,298**
33	—	—	—	—	—	—	—	—
238	52	10	7	—	11	1	13	9
5,515	**9,035**	**614**	**1,495**	**317**	**2,667**	**334**	**1,302**	**2,307**
—	175	175	—	—	—	—	—	—
29	18	—	2	—	8	1	—	7
5,544	**9,229**	**789**	**1,497**	**317**	**2,676**	**335**	**1,302**	**2,313**
352	335	334	333	333	336	329	335	336
14.82	**25.85**	**1.28**	**4.18**	**1.00**	**7.88**	**1.01**	**3.74**	**6.76**
353	336	338	337	333	336	329	335	336
14.86	**26.26**	**1.59**	**4.31**	**.94**	**7.89**	**1.01**	**3.77**	**6.77**
353	336	339	337	334	336	329	335	336
14.87	**26.75**	**1.78**	**4.41**	**.95**	**7.92**	**1.01**	**3.85**	**6.83**
353	336	339	337	334	336	329	335	336
15.63	**26.91**	**1.81**	**4.43**	**.95**	**7.95**	**1.01**	**3.89**	**6.86**
353	336	341	337	334	336	329	335	336
15.72	**27.46**	**2.31**	**4.44**	**.95**	**7.97**	**1.02**	**3.89**	**6.88**

CONSTRUCTION PAPER & BOARD & WET MACHINE BOARD			
Total	Construction Paper	Wet Machine Board	Insulating Board
4,082	2,111	157	1,815
4	—	4	—
(781)	(575)	(2)	(204)
3,305	**1,535**	**159**	**1,611**
2	—	2	—
(124)	(59)	—	(65)
3,183	**1,476**	**161**	**1,546**
—	—	—	—
(16)	(16)	—	—
3,167	**1,460**	**161**	**1,546**
—	—	—	—
1	1	—	—
3,169	**1,462**	**161**	**1,546**
3,790	**1,888**	**155**	**1,747**
6	—	6	—
(596)	(395)	—	(201)
3,200	**1,493**	**161**	**1,546**
—	—	—	—
(33)	(33)	—	—
3,167	**1,460**	**161**	**1,546**
—	—	—	—
1	1	—	—
3,168	**1,461**	**161**	**1,546**
—	—	—	—
2	2	—	—
3,170	**1,462**	**161**	**1,546**
324	327	316	322
11.69	**5.78**	**.49**	**5.42**
329	337	315	324
9.71	**4.43**	**.51**	**4.78**
330	339	315	324
9.59	**4.31**	**.51**	**4.78**
330	339	315	324
9.59	**4.31**	**.51**	**4.78**
330	339	315	324
9.60	**4.31**	**.51**	**4.78**

Totals not adjusted for rounding differences.

wood pulp by grade

capacity/annual • year end • daily

for paper & paperboard

		Practical Maximum Basis Thousands short tons	TOTAL ALL GRADES WOOD PULP	TOTAL WOOD PULP (exc. pulp for Construction Paper & Board)	DISSOLVING Total	Total	CHEMICAL PAPER GRADES SULPHITE Total	SULPHITE Bleached	SULPHITE Unbleached	SULPHATE AND Total	SULPHATE AND Bleached & Hardwood
ANNUAL CAPACITY 1981-1985	1981	**Annual Capacity**	**56,831**	**54,891**	**1,598**	**43,143**	**1,855**	**1,464**	**391**	**41,288**	**8,559**
Annual Capacity includes changes in capacity only for the portion of the year in which they are actually effective		New Machines	1,209	1,209	—	705	—	—	—	705	59
		Net Improvements	(237)	81	(51)	183	(58)	(60)	2	241	70
	1982	**Annual Capacity**	**57,803**	**56,180**	**1,547**	**44,030**	**1,797**	**1,404**	**393**	**42,233**	**8,688**
		New Machines	251	251	—	54	—	—	—	54	—
		Net Improvements	10	31	(6)	237	(32)	(32)	—	269	173
	1983	**Annual Capacity**	**58,064**	**56,462**	**1,542**	**44,321**	**1,765**	**1,372**	**393**	**42,556**	**8,861**
		New Machines	505	505	—	274	—	—	—	274	107
		Net Improvements	640	640	—	444	39	39	—	406	122
	1984	**Annual Capacity**	**59,208**	**57,606**	**1,542**	**45,039**	**1,804**	**1,411**	**393**	**43,235**	**9,090**
		New Machines	783	783	—	775	—	—	—	775	311
		Net Improvements	457	457	—	411	6	6	—	405	132
	1985*	**Annual Capacity**	**60,448**	**58,846**	**1,542**	**46,226**	**1,810**	**1,417**	**393**	**44,416**	**9,533**
YEAR END CAPACITY 1981-1985	1981	**Year End Capacity**	**57,894**	**56,038**	**1,610**	**43,820**	**1,807**	**1,414**	**393**	**42,013**	**8,638**
		New Machines	152	152	—	70	—	—	—	70	—
		Net Improvements	(95)	159	(69)	323	(43)	(43)	—	366	133
Year End Capacity is calculated by multiplying Daily Rate by number of Available Days	1982	**Year End Capacity**	**57,951**	**56,349**	**1,542**	**44,213**	**1,764**	**1,370**	**393**	**42,449**	**8,771**
		New Machines	387	387	—	30	—	—	—	30	—
		Net Improvements	(62)	(62)	—	73	2	2	—	71	131
	1983	**Year End Capacity**	**58,276**	**56,674**	**1,542**	**44,315**	**1,765**	**1,372**	**393**	**42,550**	**8,902**
		New Machines	939	939	—	912	—	—	—	912	365
		Net Improvements	919	919	—	709	45	45	—	664	159
	1984	**Year End Capacity**	**60,134**	**58,532**	**1,542**	**45,936**	**1,810**	**1,417**	**393**	**44,126**	**9,426**
		New Machines	325	325	—	325	—	—	—	325	144
		Net Improvements	275	275	—	249	—	—	—	249	79
	1985*	**Year End Capacity**	**60,734**	**59,132**	**1,542**	**46,510**	**1,810**	**1,417**	**393**	**44,700**	**9,650**
DAILY RATE 1981-1985	1981	Available Days	354	355	351	355	353	352	359	355	354
		Daily Rate	**163.38**	**157.83**	**4.59**	**123.40**	**5.11**	**4.02**	**1.10**	**118.29**	**24.38**
	1982	Available Days	354	355	351	355	353	352	359	355	354
		Daily Rate	**163.49**	**158.69**	**4.40**	**124.51**	**4.99**	**3.89**	**1.10**	**119.52**	**24.76**
	1983	Available Days	354	355	351	355	353	352	359	355	354
		Daily Rate	**164.44**	**159.84**	**4.40**	**124.80**	**4.99**	**3.90**	**1.10**	**119.81**	**25.13**
	1984	Available Days	354	355	351	355	354	352	359	355	354
		Daily Rate	**169.68**	**164.88**	**4.40**	**129.38**	**5.12**	**4.02**	**1.10**	**124.26**	**26.60**
	1985*	Available Days	354	355	351	355	354	352	359	355	354
		Daily Rate	**171.37**	**166.57**	**4.40**	**131.00**	**5.12**	**4.02**	**1.10**	**125.88**	**27.23**

*Capacity additions presented here for 1985 include only presently known commitments and do not necessarily represent final expansion plans of the industry for that year.

for construction paper & board

SODA			SEMICHEMICAL			MECHANICAL				SCREEN-INGS	WOOD PULP FOR CONSTRUCTION PAPER & BOARD		
Semi-Bleached Softwood	Unbleached		Total	Bleached	Unbleached	Total	Stone Ground-wood	Refiner	Thermo-mechan-ical	Total	Total	Stone Ground-wood & Refiner	Defib-rated/ Exploded†
11,757	**20,972**		**4,597**	**350**	**4,247**	**5,495**	**3,239**	**489**	**1,766**	**58**	**1,940**	**651**	**1,289**
22	624		240	—	240	264	67	—	198	—	—	—	—
244	(73)		(69)	2	(70)	21	(35)	6	50	(4)	(318)	(30)	(288)
12,023	**21,523**		**4,768**	**351**	**4,417**	**5,780**	**3,271**	**495**	**2,014**	**54**	**1,623**	**621**	**1,001**
54	—		95	—	95	102	—	—	102	—	—	—	—
181	(86)		(222)	12	(235)	23	(17)	40	—	—	(21)	(3)	(19)
12,258	**21,437**		**4,641**	**363**	**4,278**	**5,904**	**3,254**	**535**	**2,115**	**54**	**1,602**	**619**	**983**
154	13		54	—	54	176	—	—	176	—	—	—	—
328	(44)		171	9	162	25	—	15	10	—	—	—	—
12,739	**21,406**		**4,866**	**372**	**4,494**	**6,105**	**3,254**	**549**	**2,302**	**54**	**1,602**	**619**	**983**
253	212		7	—	7	—	—	—	—	—	—	—	—
145	128		30	—	30	15	(6)	3	17	—	—	—	—
13,137	**21,746**		**4,904**	**372**	**4,531**	**6,120**	**3,248**	**553**	**2,319**	**54**	**1,602**	**619**	**983**
11,872	**21,503**		**4,793**	**351**	**4,442**	**5,760**	**3,288**	**489**	**1,983**	**54**	**1,856**	**651**	**1,205**
70	—		—	—	—	82	—	—	82	—	—	—	—
260	(27)		(94)	—	(94)	(1)	(34)	34	—	—	(254)	(32)	(222)
12,202	**21,477**		**4,699**	**351**	**4,348**	**5,841**	**3,254**	**523**	**2,065**	**54**	**1,602**	**619**	**983**
30	—		130	—	130	227	—	—	227	—	—	—	—
57	(117)		(158)	21	(179)	24	—	24	—	—	—	—	—
12,288	**21,360**		**4,671**	**372**	**4,299**	**6,093**	**3,254**	**547**	**2,292**	**54**	**1,602**	**619**	**983**
352	195		27	—	27	—	—	—	—	—	—	—	—
386	118		193	—	193	17	—	6	11	—	—	—	—
13,027	**21,673**		**4,891**	**372**	**4,519**	**6,109**	**3,254**	**552**	**2,303**	**54**	**1,602**	**619**	**983**
92	89		—	—	—	—	—	—	—	—	—	—	—
104	66		14	—	14	13	(6)	1	18	—	—	—	—
13,223	**21,828**		**4,905**	**372**	**4,532**	**6,122**	**3,248**	**553**	**2,321**	**54**	**1,602**	**619**	**983**
354	356		353	356	353	358	356	359	360	359	334	346	328
33.57	**60.34**		**13.58**	**.99**	**12.60**	**16.10**	**9.23**	**1.36**	**5.51**	**.15**	**5.55**	**1.88**	**3.67**
354	356		353	356	353	358	356	359	360	359	333	345	326
34.50	**60.26**		**13.30**	**.99**	**12.32**	**16.33**	**9.13**	**1.46**	**5.74**	**.15**	**4.80**	**1.79**	**3.01**
354	356		353	356	353	357	356	359	358	359	333	345	326
34.74	**59.94**		**13.23**	**1.05**	**12.19**	**17.05**	**9.13**	**1.52**	**6.40**	**.15**	**4.80**	**1.79**	**3.01**
354	356		353	356	353	357	356	359	358	359	333	345	326
36.84	**60.82**		**13.85**	**1.05**	**12.80**	**17.10**	**9.13**	**1.54**	**6.43**	**.15**	**4.80**	**1.79**	**3.01**
354	356		353	356	353	357	356	359	358	359	333	345	326
37.39	**61.26**		**13.89**	**1.05**	**12.84**	**17.13**	**9.11**	**1.54**	**6.48**	**.15**	**4.80**	**1.79**	**3.01**

†Excludes the defibrated/exploded pulp capacity of mills that produce hard pressed board.

Totals not adjusted for rounding differences.

annual capacity/regional distribution 1981 & 1985

paper & paperboard

TOTAL U.S. CAPACITY		GRADES	NEW ENGLAND		MID-ATLANTIC	
1981	1985	*Practical Maximum Basis/Thousands short tons*	1981	1985	1981	1985
72,255	**76,975**	**TOTAL ALL GRADES PAPER & PAPERBOARD**	**5,740**	**6,180**	**6,316**	**6,369**
68,172	**73,806**	**TOTAL PAPER & PAPERBOARD**	**5,622**	**6,103**	**5,690**	**5,770**
33,706	**36,944**	**TOTAL PAPER**	**4,791**	**5,279**	**3,920**	**3,975**
5,457	5,994	NEWSPRINT	N.A.	N.A.	N.A.	N.A.
17,302	19,647	PRINTING, WRITING & RELATED	3,500	3,938	2,356	2,462
1,625	1,749	Uncoated Groundwood	670	774	241	234
3,047	3,741	Coated Groundwood	1,159	1,278	341	343
2,245	2,559	Coated Free Sheet	199	365	128	145
9,349	10,434	Uncoated Free Sheet[1]	1,399	1,450	1,628	1,723
1,035	1,163	Solid Bleached Bristols	74	71	18	18
5,913	5,949	PACKAGING & INDUSTRIAL CONVERTING	441	495	225	228
5,035	5,354	TISSUE	542	520	1,135	1,076
34,466	**36,862**	**TOTAL PAPERBOARD**	**832**	**824**	**1,769**	**1,795**
16,738	17,933	UNBLEACHED KRAFT	—	—	—	—
15,372	16,642	of which Kraft Linerboard	—	—	—	—
4,141	4,245	SOLID BLEACHED	N.A.	N.A.	—	—
4,988	5,535	SEMICHEMICAL	N.A.	N.A.	—	—
8,599	9,149	RECYCLED	667	694	1,769	1,795
4,082	**3,169**	**TOTAL CONSTRUCTION PAPER & BOARD**	**118**	**77**	**626**	**599**

wood pulp

56,831	**60,448**	**TOTAL ALL GRADES WOOD PULP**	**3,243**	**3,367**	**1,504**	**1,549**
54,891	**58,846**	**TOTAL WOOD PULP (exc. pulp for Construction Paper & Board)**	**3,138**	**3,288**	**1,358**	**1,403**
1,598	1,542	DISSOLVING	—	—	—	—
1,855	1,810	SULPHITE PAPER GRADES	N.A.	N.A.	N.A.	N.A.
41,346	44,470	SULPHATE AND SODA PAPER GRADES	1,858	1,937	501	515
11,757	13,137	Bleached & Semibleached Softwood	734	752	147	148
8,559	9,533	Bleached & Semibleached Hardwood	1,082	1,148	355	367
21,030	21,800	Unbleached[2]	N.A.	N.A.	—	—
4,597	4,904	SEMICHEMICAL	N.A.	N.A.	385	410
5,495	6,120	MECHANICAL	952	1,018	221	221
1,940	**1,602**	**WOOD PULP FOR CONSTRUCTION PAPER & BOARD[3]**	**105**	**79**	**146**	**146**

(1) Includes cotton fiber and thin papers.
(2) Includes screenings.
(3) Excludes defibrated/exploded pulp capacity of mills that produce hard pressed board.

E. NO. CENTRAL		**W. NO. CENTRAL**		**SO. ATLANTIC**		**E. SO. CENTRAL**		**W. SO. CENTRAL**		**MOUNTAIN & PACIFIC***	
1981	**1985**	**1981**	**1985**	**1981**	**1985**	**1981**	**1985**	**1981**	**1985**	**1981**	**1985**
11,481	**12,024**	**1,819**	**1,858**	**17,297**	**18,270**	**8,922**	**10,085**	**10,375**	**11,273**	**10,305**	**10,916**
10,743	**11,579**	**1,296**	**1,432**	**16,518**	**17,611**	**8,570**	**9,746**	**9,772**	**10,876**	**9,963**	**10,690**
6,386	**6,997**	**846**	**978**	**4,898**	**5,729**	**3,529**	**4,158**	**4,517**	**4,607**	**4,820**	**5,222**
N.A.	N.A.	—	—	762	975	1,112	1,143	1,342	1,335	1,587	1,865
4,236	4,661	828	960	2,017	2,424	1,399	1,964	1,494	1,683	1,472	1,556
271	282	108	110	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	120	155
854	1,132	N.A.	N.A.	N.A.	N.A.	—	N.A.	N.A.	N.A.	99	98
826	855	N.A.	N.A.	N.A.	N.A.	324	336	N.A.	N.A.	106	104
2,194	2,300	272	264	1,193	1,469	834	1,232	741	858	1,089	1,139
91	92	—	—	306	370	N.A.	N.A.	399	478	59	62
758	757	18	18	1,722	1,877	502	512	1,311	1,154	937	907
1,251	1,437	—	—	397	453	516	538	370	436	824	894
4,357	**4,583**	**450**	**453**	**11,620**	**11,883**	**5,041**	**5,588**	**5,254**	**6,269**	**5,143**	**5,468**
—	—	—	—	7,712	7,790	3,296	3,588	2,948	3,709	2,782	2,846
—	—	—	—	7,234	7,379	2,934	3,204	2,470	3,259	2,735	2,799
N.A.	N.A.	—	—	1,688	1,705	723	737	1,253	1,330	439	439
1,545	1,659	N.A.	N.A.	1,158	1,195	669	902	717	882	706	734
2,810	2,921	386	390	1,062	1,193	353	360	336	348	1,215	1,448
738	**445**	**523**	**426**	**779**	**659**	**352**	**339**	**603**	**397**	**342**	**227**
3,549	**3,572**	**905**	**916**	**17,814**	**19,168**	**9,653**	**10,990**	**10,356**	**11,017**	**9,807**	**9,868**
3,240	**3,348**	**574**	**605**	**17,366**	**18,732**	**9,464**	**10,801**	**10,119**	**10,880**	**9,632**	**9,790**
—	—	—	—	656	643	N.A.	N.A.	—	—	693	699
536	508	—	—	—	—	—	—	—	—	824	802
1,036	1,052	281	302	15,223	16,378	7,741	8,913	8,398	8,952	6,308	6,421
279	265	N.A.	N.A.	3,471	4,172	1,979	2,462	2,425	2,531	2,650	2,729
538	565	N.A.	N.A.	2,593	2,893	2,067	2,527	1,580	1,696	151	128
N.A.	N.A.	N.A.	N.A.	9,159	9,312	3,695	3,924	4,393	4,724	3,507	3,564
1,305	1,364	N.A.	N.A.	893	900	582	735	651	770	600	594
362	424	197	260	593	811	892	954	1,070	1,159	1,208	1,273
309	**224**	**331**	**311**	**448**	**436**	**189**	**189**	**237**	**137**	**175**	**79**

Totals not adjusted for rounding differences.

**Includes Alaska*

fiber sources

1981-1985 for paper/paperboard/wood pulp manufacture

fiber consumption in paper & paperboard manufacture

Thousands short tons

	Total U.S.	Percent of Total Fiber	New England	Mid-Atlantic	East-North Central	West-North Central	South Atlantic	East-South Central	West-South Central	Mountain & Pacific
1981										
TOTAL FIBER	**66,981**	**100.0**	**5,000**	**5,113**	**10,151**	**1,451**	**17,126**	**8,591**	**9,720**	**9,829**
TOTAL WOOD PULP	51,172	76.4	3,761	2,729	5,475	919	14,464	7,674	8,628	7,522
Manufactured on-site	43,230	64.5	2,006	1,221	2,746	670	13,874	7,438	8,404	6,870
*Purchased & transferred	7,942	11.9	1,754	1,508	2,729	249	590	236	224	652
†TOTAL RECYCLABLE PAPER	15,217	22.7	1,095	2,330	4,628	492	2,562	876	994	2,241
Mixed Papers	2,233	3.0	179	474	622	95	419	168	125	152
Newspapers	2,552	4.2	133	628	641	62	401	64	115	509
Corrugated	6,910	10.3	303	627	2,151	278	1,314	476	462	1,297
Pulp Substitutes	2,307	3.3	312	420	542	46	429	151	176	232
High Grade Deinking	1,216	1.9	168	181	672	12	—	17	116	50
OTHER FIBERS	592	0.9	145	54	48	40	99	42	98	66
1982										
TOTAL FIBER	**65,751**	**100.0**	**5,149**	**4,966**	**9,990**	**1,393**	**16,907**	**8,595**	**9,175**	**9,576**
TOTAL WOOD PULP	49,963	76.0	3,943	2,671	5,436	866	14,091	7,675	8,101	7,179
Manufactured on-site	42,006	63.9	2,104	1,224	2,645	608	13,572	7,439	7,887	6,528
*Purchased & transferred	7,956	12.1	1,839	1,448	2,792	258	518	236	214	651
†TOTAL RECYCLABLE PAPER	15,245	23.2	1,036	2,248	4,529	495	2,728	870	986	2,353
Mixed Papers	2,019	3.1	153	433	539	92	407	166	95	134
Newspapers	2,832	4.3	132	631	666	61	394	64	124	759
Corrugated	6,889	10.5	298	599	2,072	281	1,475	470	500	1,195
Pulp Substitutes	2,255	3.4	317	399	533	49	450	142	152	214
High Grade Deinking	1,251	1.9	136	187	719	12	1	28	116	53
OTHER FIBERS	543	0.8	170	46	25	32	89	50	88	43
1983										
TOTAL FIBER	**71,221**	**100.0**	**5,453**	**5,314**	**10,983**	**1,514**	**18,164**	**9,328**	**9,802**	**10,662**
TOTAL WOOD PULP	53,500	75.1	4,118	2,754	5,871	946	15,155	8,236	8,490	7,929
Manufactured on-site	45,192	63.4	2,249	1,243	2,902	662	14,609	7,965	8,333	7,229
*Purchased & transferred	8,308	11.7	1,870	1,512	2,969	285	546	271	157	699
†TOTAL RECYCLABLE PAPER	17,164	24.1	1,152	2,510	5,085	536	2,926	1,045	1,221	2,689
Mixed Papers	2,190	3.1	159	476	588	94	441	174	106	151
Newspapers	3,018	4.2	142	659	739	66	434	53	125	802
Corrugated	8,064	11.3	318	749	2,394	311	1,585	608	656	1,443
Pulp Substitutes	2,484	3.5	333	426	587	52	466	174	205	239
High Grade Deinking	1,408	2.0	199	200	777	13	2	35	129	54
OTHER FIBERS	557	0.8	183	50	27	32	83	47	91	44
1984										
TOTAL FIBER	**73,580**	**100.0**	**5,591**	**5,390**	**11,170**	**1,576**	**19,097**	**9,646**	**10,217**	**10,893**
TOTAL WOOD PULP	55,205	75.0	4,210	2,773	5,964	1,033	15,911	8,523	8,675	8,115
Manufactured on-site	46,709	63.5	2,330	1,245	2,956	742	15,317	8,237	8,489	7,393
*Purchased & transferred	8,495	11.5	1,880	1,528	3,008	291	594	286	186	722
†TOTAL RECYCLABLE PAPER	17,839	24.3	1,191	2,566	5,177	534	3,106	1,076	1,452	2,737
Mixed Papers	2,229	3.0	164	483	602	93	452	175	110	150
Newspapers	3,079	4.2	153	669	750	66	441	53	138	809
Corrugated	8,342	11.4	328	772	2,424	310	1,727	617	690	1,474
Pulp Substitutes	2,767	3.8	347	442	616	53	484	192	386	248
High Grade Deinking	1,422	1.9	199	201	786	13	2	39	129	54
OTHER FIBERS	537	0.7	189	51	28	9	80	47	91	41

Comprises all dried, wet lap or slush pulp not produced on-site including transfers from company owned or affiliated mills.
†Includes construction grades and molded pulp products.

FIBER CONSUMPTION IN PAPER AND PAPERBOARD MANUFACTURE (Continued)

Thousands short tons

	Total U.S.	Percent of Total Fiber	New England	Mid-Atlantic	East-North Central	West-North Central	South Atlantic	East-South Central	West-South Central	Mountain & Pacific
1985										
TOTAL FIBER	**75,073**	**100.0**	**5,636**	**5,431**	**11,331**	**1,584**	**19,427**	**10,152**	**10,483**	**11,030**
TOTAL WOOD PULP	56,198	74.9	4,243	2,788	5,990	1,041	16,122	9,004	8,862	8,148
Manufactured on-site	47,640	63.5	2,360	1,245	2,964	747	15,524	8,712	8,677	7,412
*Purchased & transferred	8,558	11.4	1,883	1,544	3,026	294	598	292	186	735
†TOTAL RECYCLABLE PAPER	18,333	24.4	1,198	2,592	5,312	534	3,225	1,101	1,529	2,841
Mixed Papers	2,257	3.0	165	488	607	93	461	180	111	152
Newspapers	3,153	4.2	155	677	772	66	441	75	139	827
Corrugated	8,619	11.5	331	779	2,453	310	1,825	598	766	1,556
Pulp Substitutes	2,796	3.7	348	446	611	53	496	208	384	251
High Grade Deinking	1,507	2.0	199	201	869	13	2	40	129	55
OTHER FIBERS	543	0.7	195	52	28	9	80	47	91	41

Totals not adjusted for rounding differences.

pulpwood consumption in wood pulp manufacture

Thousands of CORDS

1981										
TOTAL PULPWOOD	**81,177**	**100.0**	**5,039**	**1,986**	**4,734**	**1,028**	**25,494**	**13,730**	**13,897**	**15,270**
Roundwood & Roundwood Chips	47,514	58.5	3,892	1,587	3,444	800	16,831	9,637	8,572	2,752
Forest Residues	4,034	5.0	—	53	376	123	1,702	419	914	447
Manufacturing Residues	29,629	36.5	1,147	345	915	105	6,961	3,674	4,411	12,072
1982										
TOTAL PULPWOOD	**79,388**	**100.0**	**5,189**	**2,047**	**4,584**	**1,022**	**25,285**	**13,824**	**13,286**	**14,152**
Roundwood & Roundwood Chips	46,827	59.0	4,028	1,673	3,473	814	16,343	9,669	8,317	2,509
Forest Residues	3,957	5.0	—	45	336	115	1,743	407	909	402
Manufacturing Residues	28,605	36.0	1,161	330	775	93	7,199	3,747	4,060	11,240
1983										
TOTAL PULPWOOD	**85,406**	**100.0**	**5,272**	**2,067**	**4,912**	**1,084**	**26,927**	**14,674**	**14,170**	**16,300**
Roundwood & Roundwood Chips	49,922	58.4	4,115	1,681	3,699	858	17,406	10,326	8,899	2,937
Forest Residues	4,236	5.0	—	45	384	134	1,830	479	916	448
Manufacturing Residues	31,249	36.6	1,157	341	830	92	7,691	3,869	4,355	12,914
1984										
TOTAL PULPWOOD	**88,131**	**100.0**	**5,367**	**2,091**	**5,005**	**1,151**	**28,256**	**15,283**	**14,370**	**16,609**
Roundwood & Roundwood Chips	51,536	58.5	4,193	1,704	3,774	881	18,201	10,717	9,019	3,047
Forest Residues	4,326	4.9	—	47	389	179	1,877	494	916	425
Manufacturing Residues	32,269	36.6	1,173	341	842	91	8,178	4,073	4,434	13,138
1985										
TOTAL PULPWOOD	**90,245**	**100.0**	**5,380**	**2,091**	**5,013**	**1,144**	**28,708**	**16,508**	**14,513**	**16,889**
Roundwood & Roundwood Chips	52,781	58.5	4,205	1,703	3,781	874	18,504	11,647	9,027	3,041
Forest Residues	4,420	4.9	—	48	389	179	1,966	494	916	428
Manufacturing Residues	33,044	36.6	1,175	341	843	91	8,239	4,367	4,570	13,420

Totals not adjusted for rounding differences.

FIBER CONSUMPTION DEFINTIONS

1981—Actual consumption
1982—Best estimate based on year-to-date experience
1983-1985—Consumption at capacity levels of production

recyclable paper in paper & paperboard

actual consumption — planned future

END PRODUCT	1981 Total	1981 Mixed Papers	1981 Newspapers	1981 Corrugated	1981 Pulp Substitutes	1981 High Grade Deinking	1982 Total	1982 Mixed Papers	1982 Newspapers	1982 Corrugated	1982 Pulp Substitutes	1982 High Grade Deinking	Total
TOTAL ALL GRADES	**15,217**	**2,233**	**2,552**	**6,910**	**2,307**	**1,216**	**15,245**	**2,019**	**2,832**	**6,889**	**2,255**	**1,251**	**17,164**
TOTAL PAPER	**3,889**	**104**	**1,056**	**242**	**1,414**	**1,074**	**4,216**	**93**	**1,334**	**264**	**1,429**	**1,097**	**4,557**
NEWSPRINT	930	—	894	—	36	—	1,193	—	1,160	—	34	—	1,236
PRINTING, WRITING & RELATED	877	7	—	2	560	307	880	7	—	3	581	290	1,007
PACKAGING & IND. CONVERTING	289	32	7	77	166	7	300	28	8	92	166	7	307
TISSUE	1,793	65	154	162	651	759	1,843	59	167	169	648	800	2,007
TOTAL PAPERBOARD	**9,986**	**1,462**	**1,258**	**6,324**	**827**	**115**	**9,912**	**1,436**	**1,267**	**6,320**	**764**	**125**	**11,443**
KRAFT, BLEACHED & UNBLEACHED	1,124	—	—	1,008	114	2	1,259	—	—	1,121	124	13	1,557
SEMICHEMICAL	1,323	73	9	1,217	23	—	1,339	80	8	1,219	32	—	1,502
RECYCLED	7,539	1,389	1,248	4,098	690	113	7,314	1,356	1,259	3,979	608	112	8,384
CONSTRUCTION PAPER & BOARD	**1,342**	**667**	**238**	**344**	**66**	**27**	**1,117**	**490**	**231**	**305**	**62**	**29**	**1,164**

world capacity

wood pulp (Except Defibrated/Exploded & Screenings)

Thousands of METRIC tons

	TOTALS 1981	TOTALS 1985	Percent Increase	MECHANICAL 1981	MECHANICAL 1985	SEMICHEMICAL 1981	SEMICHEMICAL 1985	CHEMICAL PAPER GRADES 1981	CHEMICAL PAPER GRADES 1985	CHEMICAL PAPER GRADES of which 1981
WORLD TOTAL	**148,229**	**161,850**	**9.2**	33,941	38,818	10,007	10,770	98,140	105,845	26,473
DEVELOPED MKT. ECONOMIES	**120,926**	**129,700**	**7.3**	28,482	32,518	8,368	8,672	80,237	84,625	21,859
NORTHERN AMERICA	**72,168**	**77,930**	**8.0**	13,861	15,997	4,615	4,951	51,939	55,255	11,686
of which: U.S.	**49,744**	**53,336**	**7.2**	4,985	5,552	4,170	4,449	39,139	41,936	4,876
Canada	**22,424**	**24,594**	**9.7**	8,876	10,445	445	502	12,800	13,319	6,810
JAPAN	**12,784**	**13,108**	**2.5**	2,497	2,546	1,776	1,759	8,062	8,354	1,083
WESTERN EUROPE	**32,518**	**34,290**	**5.5**	10,832	12,328	1,517	1,492	18,895	19,252	8,791
of which: E.E.C.	**6,624**	**7,202**	**8.7**	3,207	3,513	624	647	2,467	2,708	965
Nordic Countries	**20,890**	**21,725**	**4.0**	6,620	7,795	715	680	12,910	12,660	6,140
Rest of W.E.	**5,004**	**5,372**	**7.4**	1,005	1,020	178	165	3,518	3,884	1,686
OCEANIA	**2,259**	**2,695**	**19.3**	919	1,232	397	407	943	1,056	309
OTHERS	**1,197**	**1,668**	**39.3**	373	415	63	63	398	708	40
DEVELOPING MKT. ECONOMIES	**7,755**	**10,215**	**31.7**	1,126	1,658	528	773	5,849	7,511	2,361
AFRICA	**474**	**914**	**92.8**	30	37	10	66	434	811	362
LATIN AMERICA	**5,489**	**7,018**	**27.9**	570	904	393	475	4,470	5,582	1,909
of which: Brazil	**3,326**	**4,063**	**22.2**	226	414	150	150	2,908	3,457	1,408
Mexico	**625**	**668**	**6.9**	79	139	—	—	546	529	N.A.
ASIA	**1,792**	**2,283**	**27.4**	526	717	125	232	945	1,118	90
CENT. PLANNED ECONOMIES	**19,548**	**21,935**	**12.2**	4,333	4,642	1,111	1,325	12,054	13,709	2,253
of which: USSR	**12,320**	**13,750**	**11.6**	2,345	2,500	700	850	7,800	8,700	1,900

Totals not adjusted for rounding differences.

**No data available for 1985.*

manufacture

Data on recyclable paper are collected in an industry-wide survey of paper and paperboard mills under the following definitions.
1981—Actual consumption
1982—Best estimate based on year-to-date experience
1983-1985—Consumption at capacity levels of production

consumption

Thousands Short Tons

1983					1984						1985					
Mixed Papers	News-papers	Corru-gated	Pulp Substi-tutes	High Grade Deinking	Total	Mixed Papers	News-papers	Corru-gated	Pulp Substi-tutes	High Grade Deinking	Total	Mixed Papers	News-papers	Corru-gated	Pulp Substi-tutes	High Grade Deinking
2,190	3,018	8,064	2,484	1,408	17,839	2,229	3,079	8,342	2,767	1,422	18,333	2,257	3,153	8,619	2,796	1,507
114	1,391	284	1,534	1,234	4,650	119	1,397	297	1,595	1,242	4,851	118	1,431	368	1,608	1,326
—	1,202	—	34	—	1,241	—	1,207	—	34	—	1,256	—	1,222	—	34	—
7	—	3	630	367	1,041	7	—	7	655	372	1,059	7	—	7	665	381
28	8	107	158	7	304	27	8	112	151	7	362	27	8	170	151	7
80	181	174	712	860	2,064	85	183	178	756	864	2,174	85	201	192	758	938
1,570	1,382	7,458	888	145	12,026	1,614	1,431	7,722	1,109	150	12,313	1,643	1,465	7,928	1,125	152
—	—	1,410	128	20	1,751	—	—	1,495	232	24	1,830	—	—	1,572	233	25
88	11	1,343	60	—	1,603	88	11	1,363	141	—	1,616	88	11	1,376	141	—
1,482	1,371	4,706	701	124	8,672	1,526	1,419	4,864	736	126	8,867	1,555	1,454	4,980	752	127
506	245	322	62	29	1,163	496	251	323	63	30	1,168	496	257	323	63	29

Recyclable paper for molded pulp included under Construction Paper & Board as follows: 1981 & 1982, 180,000 tons; 1983-1985, 187,000 tons.

paper & paperboard (Except Insulating & Hard Pressed Board)

Thousands of METRIC tons

	DISSOLVING		TOTALS			NEWSPRINT		PRINTING & WRITING		WRAPPING		ALL OTHER	
market 1984*	1981	1985	1981	1985	Percent Increase	1981	1985	1981	1985	1981	1985	1981	1985
27,600	6,141	6,417	**204,771**	**225,268**	**10.0**	30,150	34,201	50,102	57,011	93,272	101,352	31,247	32,704
22,131	3,839	3,885	**158,947**	**172,559**	**8.6**	25,295	28,231	40,403	45,739	71,188	75,954	22,061	22,635
12,222	1,753	1,727	**79,034**	**85,650**	**8.4**	14,441	16,138	17,036	19,726	37,966	40,293	9,591	9,493
5,137	1,450	1,399	**63,903**	**68,429**	**7.1**	4,951	5,438	15,357	17,484	34,706	36,800	8,889	8,707
7,085	303	328	**15,131**	**17,221**	**13.8**	9,490	10,700	1,679	2,242	3,260	3,493	702	786
1,033	449	449	**22,473**	**24,441**	**8.8**	2,929	3,065	5,855	6,102	10,331	11,708	3,358	3,566
8,527	1,274	1,227	**53,506**	**57,834**	**8.1**	7,033	7,882	16,934	19,236	20,781	21,519	8,758	9,197
1,141	326	334	**29,600**	**31,535**	**6.5**	2,102	2,238	10,393	11,309	10,465	11,057	6,640	6,931
5,800	645	590	**15,390**	**17,395**	**13.0**	4,165	4,800	3,950	5,170	6,045	6,105	1,230	1,320
1,586	303	303	**8,516**	**8,904**	**4.6**	766	844	2,591	2,757	4,271	4,357	888	946
309	—	—	**2,412**	**2,683**	**11.2**	581	725	293	310	1,325	1,429	213	219
40	363	482	**1,522**	**1,951**	**28.2**	311	421	285	365	785	1,005	141	160
2,871	252	273	**17,622**	**21,635**	**22.8**	1,577	2,373	4,390	5,391	9,793	11,694	1,862	2,177
522	—	—	**774**	**1,193**	**54.1**	27	104	253	376	451	665	43	48
2,178	56	57	**9,854**	**12,396**	**25.8**	694	1,145	2,008	2,647	5,728	6,892	1,424	1,712
1,509	42	42	**3,872**	**4,878**	**26.0**	127	297	865	1,107	2,312	2,836	568	638
N.A.	—	—	**2,556**	**3,450**	**35.0**	201	316	515	734	1,502	1,934	338	466
171	196	216	**6,994**	**8,046**	**15.0**	856	1,124	2.129	2,368	3,614	4,137	395	417
2,598	2,050	2,259	**28,202**	**31,074**	**10.2**	3,278	3,597	5,309	5,881	12,291	13,704	7,324	7,892
2,000	1,475	1,700	**12,500**	**14,000**	**12.0**	1,800	1,950	1,550	1,700	8,310	9,465	840	885

Source: Food and Agriculture Organization of the United Nations, U.S. capacity-American Paper Institute.

announced capacity expansion

NEW MILLS & MACHINES

Expansion projects include new paper, paperboard and wood pulp mills and new paper and paperboard machines in existing mills. These projects have been publicly announced by the managements of the companies concerned and are included in the capacity estimates reported in this survey. Estimates also include confirmed expansion projects that have not been publicly announced which, in keeping with the confidential nature of the survey, are not included in this listing.

PROJECTS INCLUDED IN SURVEY ESTIMATES

Thousands short tons

Grade	Annual Capacity	Company	Location
1981			
Newsprint	210	North Pacific Paper Corp.	Longview, WA
Uncoated Groundwood	160	Madison Paper Corp.	Madison, ME
Coated Groundwood	160	Boise Cascade Corp.	Rumford, ME
Uncoated Free Sheet	154*	Mead Corp.	Chillicothe, OH
Uncoated Free Sheet	100	Willamette Industries	Hawesville, KY
Uncoated Free Paper	15 †	Mohawk Paper Mills	Cohoes, NY
Unbleached Kraft Paper	236*	St. Regis Paper Co.	Pensacola, FL
Tissue	85	Fort Howard Paper Co.	Muskogee, OK
Tissue	60	Georgia-Pacific Corp.	Palatka, FL
Tissue	54	Scott Paper Co.	Everett, WA
Unbleached Kraft Linerboard	460	International Paper Co.	Mansfield, LA
Unbleached Kraft Linerboard	105	Stone Container Corp.	Florence, SC
Semichemical Paperboard	270	International Paper Co.	Mansfield, LA
Wet Machine Board	10	Spaulding Fibre Co.	North Rochester, NH
Bleached Sulphate Pulp	300	Buckeye Cellulose Corp.	Oglethorpe, GA
1982			
Coated Groundwood	200	Mead Corp.	Escanaba, MI
Coated Groundwood	175	Weyerhaeuser Co.	Columbus, MS
Coated Groundwood	170	St. Regis Paper Co.	Sartell, MN
Cotton Fiber	3	Portals Ltd.	Hawkinsville, GA
Tissue	65*	Wisconsin Tissue Mills Inc.	Menasha, WI
Unbleached Kraft Linerboard	200	Weyerhaeuser Co.	Valliant, OK
1983			
Newsprint	225	Augusta Newsprint Co.	Augusta, GA
Coated Free Sheet	200	Scott Paper Co.	Skowhegan, ME
Semichemical Paperboard	210	MacMillan Bloedel Inc.	Pinehill, AL
1984			
Uncoated Free Sheet	215	Union Camp Corp.	Eastover, SC
Uncoated Free Sheet	150	Champion International Corp.	Courtland, AL
Unbleached Kraft Linerboard	280	Independent Kraft Corp.	Tuscaloosa, AL
Bleached Sulphate Pulp	355	Leaf River Forest Prod. Inc.	New Augusta, MS
1985			
Uncoated Free Sheet	160	Crown Zellerbach Corp.	Camas, WA

*Will replace existing facilitites net increases not announced. †Net Increase

definitions & grade descriptions (continued)

Recycled Paperboard: Paperboard manufactured from a combination of recycled fibers from various grades of paper stock with the predominant portion of its furnish being recycled fibers: sometimes including a very minor portion of virgin fibers.

Linerboard: Recycled paperboard produced from a furnish containing less than 80% virgin kraft wood pulp and used as facing material when combining paperboard for conversion into corrugated or solid fiber boxes.

Corrugating Medium: Recycled paperboard produced from a furnish containing less than 75% virgin wood pulp and used as the fluting material when combining paperboard for conversion into corrugated boxes.

Container Chip and Filler Board: Recycled paperboard manufactured as a filler for solid fiber board for conversion into solid fiber boxes and other container chipboard (all chipboard under 26 pounds per 1000 sq. ft. manufactured for use as facing corrugated, solid fiber and single faced products which are used for interior packing, e.g., pads, partitions, dividers, layers and cushioning).

Folding: Recycled paperboard manufactured with bending quality for conversion into folding cartons (including unlined chipboard, kraft lined, white lined and clay coated).

Set-Up: Recycled paperboard manufactured with non-bending specifications for conversion into rigid or set-up boxes (including plain chipboard, newslined, white vat lined).

Gypsum Wallboard Facing: Recycled paperboard manufactured for use as liner or facing on gypsum board, plasterboard (includes white, cream, gray, blue and all colors).

Other: Recycled paperboard with the same characteristics as paperboard for bending packaging or non-bending packaging but for non-packaging uses; plus recycled paperboard for end uses not otherwise classified, such as tag, file folder, tube, can, drum, match stem, tablet backs, toys, etc.

CONSTRUCTION PAPER & BOARD & OTHER

Construction Paper: Sheathing paper, felts (roofing felts, floor covering, automotive felts, deadening, industrial, pipe covering, refrigerator), asbestos paper and asbestos filled paper, flexible wood fiber insulation.

Wet Machine Board: Binders board, shoe board (e.g., counter board, heel board, innersole, etc.) automotive board, chair seat backing, coaster board, luggage, mill board, panel board, table top board, etc.

Insulating Board: A fibrous-felted homogenous panel made by interfelting of the fibers (e.g., interior building board, wallboard, sound deadening board, acoustical tile, exterior sheathing board, roof insulation board, trailer board, etc.).

WOOD PULP

Dissolving & Special Alpha: Highly refined bleached white sulphite or sulphate pulps with a high content of alpha (pure cellulose) fiber.

Sulphite Paper Grades: Paper grade pulps produced by the sulphite process. Bleached pulp must achieve a G.E. Brightness of more than 75.

Sulphate & Soda Paper Grades: Paper grades pulps produced by the sulphate or soda process. Bleached pulp must achieve a G.E. Brightness of more than 75. Semibleached pulp must achieve a G.E. Brightness of not less than 45 or more than 75.

Semichemical: High yield pulps produced with the use of some chemical agent such as neutral sulphite (N.S.S.C.); alkaline cook; chemipulp (defibrated pulp put through reaction chambers); chemi-mechanical pulp with a yield usually above 60%.

Mechanical: Fine textured, usually bright pulps, used in paper and paperboard manufacture and produced by mechanical rather than chemical processes.

Stone Groundwood: Pulp produced by grinding wood logs or bolts (usually 4 ft. in length) into relatively short fibers.

Refiner: Pulp produced by subjecting wood chips and/or residues to atmospheric or open discharge refining.

Thermomechanical: A high-yield pulp produced by a thermomechanical process in which wood particles are softened by pre-heating under pressure prior to a pressurized primary refining stage. Usually replaces or reduces the chemical pulp component in newsprint or groundwood papers.

WOOD PULP FOR CONSTRUCTION PAPER & PAPERBOARD

Coarse, often brown, pulps used in the manufacture of insulating board and construction paper. Also includes similar pulps if used in the manufacture of wet machine board. Excludes pulp for hard pressed board.

Stone Groundwood and Refiner: Pulps produced by the stone groundwood or refiner processes but used in the manufacture of construction paper and board.

Defibrated/Exploded: Pulps produced by subjecting wood chips to preheating and pressurized refining. Similar to the thermomechanical process except that operating variables produce an economical, coarse brown pulp suitable only for construction paper and board.

Screenings: Rejects and off-quality screenings from all grades of wood pulp except dissolving.

FIBERS

Roundwood: Comprises roundwood bolts and logs (4 feet or longer, including tree lengths) brought to the pulpmill for chipping, or chips made from primary roundwood bolts and logs at a chipmill, remote from the pulpmill.

Forest Residues: All logging residues such as portions of bolts or logs less than the minimum diameter specified by the consuming mill and poles, saplings, slash, limbs, twigs, or portions of bolts or logs not regarded as merchantable in normal pulpwood or sawlog operations. May also include merchantable portions of trees that will not be used for higher value products. Chips made from forest residues.

Manufacturing Residues: All mill residues such as slabs, edgings, trimmings, cores, planer shavings, sawdust or other wood residues of a wood manufacturing process and chips made from these residues.

Other Fibers: Cotton linters, cotton linter pulp, textile mill waste and cuttings, rags, waste rope and cordage, bagasse, flax, straw, jute, esparto, kenaf and all other non-wood fibers used in paper and paperboard manufacture.

RECYCLABLE PAPER

Mixed Papers: Number 1 and 2 mixed papers, super mixed papers, boxboard cuttings, mill wrappers.

Newspapers: Number 1 news, overissue news, super news. Any grade to be used as a news substitute.

Corrugated: Old containers both corrugated and solid fiber, container plant cuttings.

Pulp Substitutes & High Grade Deinking: Includes ledger, tabulating cards, bleached sulphate shavings (unless used as a news substitute). Envelope and bleached sulphite and sulphate cuttings, coated book stock, news and publication blanks, kraft paper and bags and all other grades not classified above.

Print free grades are reported as *Pulp Substitutes* and printed grades, if deinked, are reported as *High Grade Deinking*.